

REMARKS

In this Amendment, Applicants are amending Claims 1, 3, 4, and 19. Accordingly, Claims 1-31 are currently pending in the Application.

In the Office Action mailed February 13, 2003, the Examiner withdrew the rejection of Claim 2 under 35 U.S.C. § 112, first paragraph. Applicants would like to thank the Examiner for withdrawing the rejection.

In the Office Action, the Examiner rejected Claims 1, 3-5, 19-20, 29 and 30 under 35 U.S.C. § 102(b) as being anticipated by Yamada et al. (U.S. Patent No. 5,589,299) ("Yamada"). To the extent the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

Applicants respectfully submit that independent Claims 1, 3, 4, and 19 recite the limitation of a copper-based alloy which is produced by a plating process into a foil shape. Applicants respectfully submit that Yamada does not teach or suggest the desirability of a foil shape produced by a plating process as recited in independent Claims 1, 3, 4, and 19.

Applicants are respectfully submitting a Declaration Pursuant to 37 C.F.R. § 1.132 which demonstrates the benefits of producing a foil by a plating process.

Applicants respectfully submit that dependent Claims 5, 20, and 29-30 are dependent Claims which depend from one of independent Claims 1, 3, 4, and 19, discussed above, and are allowable for at least the same reasons as their respective independent claims. Applicants respectfully request that the Examiner withdraw the rejection to Claims 1, 3-5, 19-20, and 29-30.

In the Office Action, the Examiner rejected Claims 1, 4, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Idota et al (U.S. Patent No. 5,686,203) ("Idota"). To the extent the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

In the Office Action, the Examiner stated that Idota does not teach any specific examples of the disclosed copper alloy. The Examiner goes on to state, "However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Idota teaches and suggests that copper alloys are particularly preferred."

As the Examiner noted, Idota does not teach or suggest the desirability of the specific copper-based alloys as recited in Applicants' independent Claims 1, 4, and 19. Applicants respectfully submit that the Examiner is basing the rejection on the Examiner's personal knowledge. Applicants respectfully request that the Examiner file an affidavit pursuant to 37 C.F.R. § 1.104(d)(2) to support the Examiner's knowledge.

Applicants respectfully submit that Idota does not teach or suggest the desirability of a foil produced by a plating process. Applicants are submitting herewith a Declaration Pursuant to 37 C.F.R. § 1.132 to demonstrate the benefits of an alloy foil produced by a plating process.

Applicants respectfully request that the Examiner withdraw the rejection to Claims 1, 4, and 19.

In the Office Action, the Examiner rejected Claims 1, 4, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Yamahira et al. (U.S. Patent No. 5,601,950) ("Yamahira") as evidenced by Idota. To the extent the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

In the Office Action, the Examiner stated that Yamahira does not explicitly state any particular alloys for the current collector. Applicants respectfully submit that Idota does not remedy the defects of Yamahira, as discussed above. Applicants respectfully submit that the Examiner is basing the rejection on the Examiner's own personal knowledge. Applicants respectfully request that the Examiner file an affidavit pursuant to 37 C.F.R. § 1.104(d)(2) to support the Examiner's personal knowledge.

Applicants respectfully submit that neither Yamahira nor Idota teach or suggest the desirability of a foil produced by a plating process. Applicants are filing herewith a Declaration Pursuant to 37 C.F.R. § 1.132 that demonstrates the benefits of an alloy foil produced by a plating process.

In the Office Action, the Examiner stated that Claims 16-18, 21-28, and 31 contained allowable subject matter. Applicants would like to thank the Examiner for stating that those claims contain allowable subject matter.

CONCLUSION

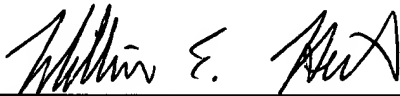
In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 6/17/03

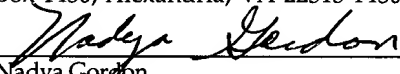


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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited as First Class Mail with sufficient postage with the United States Postal Service in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 17, 2003.



Nadya Gordon Date

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The claims are amended as follows.

1. (Four Times Amended) A lithium secondary battery comprising:
a positive electrode formed by coating a lithium metal oxide on a positive current collector;
a negative electrode formed by coating carbonaceous materials or SnO₂ on a negative current collector, where the negative current collector is made of a Cu-based alloy ~~foil~~ with a thickness of 20 μm or less and the Cu-based alloy ~~foil~~ comprises at least one material selected from the group consisting of magnesium, tin, boron, chromium, manganese, cobalt, vanadium, zirconium, niobium, bismuth, lead, silver, and misch metal and further comprises a copper-based material selected from the group consisting of copper, copper/nickel, copper/titanium, and copper/nickel/titanium, wherein the Cu-based alloy ~~foil~~ is produced by a plating process into a foil shape;
a separator interposed between the positive and negative electrodes; and
an electrolyte into which the positive and negative electrodes and the separator are immersed.

3. (Four Times Amended) A method for making a lithium secondary battery comprising:
forming a positive electrode by coating a lithium metal oxide on a positive current collector;
forming a negative electrode by coating carbonaceous materials or SnO₂ on a negative current collector, where the negative current collector is made of a Cu-based alloy ~~foil~~ with a thickness of 20 μm or less and the Cu-based alloy ~~foil~~ comprises at least one material selected from the group consisting of magnesium, tin, boron, chromium, manganese, cobalt, vanadium, zirconium, niobium, bismuth, lead, silver, and misch metal and further comprises a copper-based material selected from the group

consisting of copper, copper/nickel, copper/titanium, and copper/nickel/titanium, wherein the Cu-based alloy ~~foil~~ is produced by a plating process into a foil shape; interposing a separator between the positive and negative electrodes; and injecting an electrolyte to immerse the positive and negative electrodes and the separator.

4. (Amended) A lithium secondary battery comprising:

a positive electrode formed by coating a lithium metal oxide on a positive current collector;

a negative electrode formed by coating at least one of carbonaceous materials and SnO_2 on a negative current collector, where the negative current collector is made of a copper-based alloy ~~foil~~ with a thickness of $20\text{ }\mu\text{m}$ or less and the copper-based alloy comprises at least two materials selected from the group consisting of nickel, titanium, magnesium, tin, zinc, boron, chromium, manganese, silicon, cobalt, iron, vanadium, aluminum, zirconium, niobium, phosphorous, bismuth, lead, silver, and misch metal, wherein the copper-based alloy is produced by a plating process into a foil shape;

a separator interposed between the positive and negative electrodes; and an electrolyte into which the positive and negative electrodes and the separator are immersed.

19. (Amended) A method for making a lithium secondary battery comprising:

forming a positive electrode by coating a lithium metal oxide on a positive current collector;

forming a negative electrode by coating at least one of carbonaceous materials and SnO_2 on a negative current collector, where the negative current collector is made of a Cu-based alloy ~~foil~~ with a thickness of $20\text{ }\mu\text{m}$ or less, and the Cu-based alloy ~~foil~~ including at least two materials selected from the group consisting of nickel, titanium, magnesium, tin, zinc, boron, chromium, manganese, silicon, cobalt, iron, vanadium, aluminum, zirconium, niobium, phosphorous, bismuth, lead, silver, and misch metal, wherein the copper-based alloy is produced by a plating process into a foil shape;

interposing a separator between the positive and negative electrodes; and

injecting an electrolyte to immerse the positive and negative electrodes and the separator.